Toward integrated medical resource policies for Canada: 11. Improving effectiveness and efficiency

Greg L. Stoddart, PhD; Morris L. Barer, PhD

This article is the 11th in a series of articles[1-10] based on the report *Toward Integrated Medical Resource Policies for Canada*,* prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health.[11-13] In this article we discuss the role of physicians in improving effectiveness and efficiency within Canada's publicly financed health care system.

We begin with some general observations that are based on our experiences and reflections during interviews and the preparation of the report. We then focus on three subjects: the need for increased emphasis on effectiveness and appropriateness as guiding criteria for policy formulation; the scope for improving the effectiveness and efficiency of current patterns of utilization of medical services; and issues pertaining to the self-regulatory nature of the medical profession, including maintenance of competence, as well as control over scope of practice.

Physicians as private participants in a public system

Earlier[5] we referred to the need for a new "social contract" for academic medical centres; however, all of medicine, not just academic medicine, operates under a social contract. We and many others believe that certain aspects of this contract, although implicit, require more review.

For strategic planning in the physician resource sector and, certainly, for substantial change, basic questions need to be addressed: What is it that society *needs* physicians to do or *wants* done by physicians? The answers are critical for policies throughout the analytic framework used in the report,[3,11] from whom to admit into medical training, through how many and what types of physicians to train, to how to organize delivery settings and remunerate personnel. The answers also have important implications for the training of other health professionals and for the need for social policies outside of the health care field.

The rationale for such a review is much more important than fiscal pressures on provincial governments. It is to ensure that the types of services, the numbers of personnel and the policies meet changing health and social needs. Furthermore, if one result of such policy reform is a moderation of public resource commitments to the medical care sector, then provincial governments might reasonably be expected to monitor the success of the new pattern of resource allocation in improving the health or well-being of the population. Expenditure control for its own sake is an empty objective.

Our interviews with physicians and their repre-

**The full report (in two volumes) is available for $75 (including postage and GST) from Barbara Moore, Centre for Health Services and Policy Research, University of British Columbia, at the reprint requests address, or fax (604) 822-5690, or from Lynda Marsh, Centre for Health Economics and Policy Analysis, McMaster University, Rm. 3H26, Health Sciences Centre, 1200 Main St. W, Hamilton, ON L8N 3Z5, or fax (416) 546-5211.*

Dr. Stoddart is professor, Centre for Health Economics and Policy Analysis and Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ont.; he is also a fellow of the Population Health Program, Canadian Institute for Advanced Research. Dr. Barer is director, Centre for Health Services and Policy Research, and professor, Department of Health Care and Epidemiology, University of British Columbia, Vancouver, BC; he is also an associate of the Population Health Program, Canadian Institute for Advanced Research.

Reprint requests to: Dr. Morris L. Barer, Centre for Health Services and Policy Research, University of British Columbia, 429–2194 Health Sciences Mall, Vancouver, BC V6T 1Z3

← For prescribing information see page 1708

sentatives and with representatives of provincial ministries responsible for health care revealed a frustration that we think indicates the need for better articulation of the future role of the medical profession. Today's physicians frequently feel harassed and unappreciated, and caught in a tightening vice of greater public expectations of what medicine can do but insufficient corresponding increases in the resources with which to do it. Looking inside the profession, they see the personal stresses and sacrifices; looking outside, they increasingly see not public appreciation but criticism from those holding the purse strings and public dissatisfaction with their politics, if not with their practice.

The payers for services also have a sense of frustration but of a different type. They believe that the medical profession has resisted changes in the organization and financing of health care that have threatened the professional and economic interests of physicians. They view physicians as being relatively slow to accept public accountability — to adopt more effective and appropriate patterns of practice or even to show a willingness to scrutinize what they do.

Reviewing the expectations under which medicine operates is neither conceptually nor operationally simple. We do not know how to do it. Our discussions with physicians and others suggest, however, that it is important to distinguish three different "zones" and their respective policy implications.

In the first zone are procedures, services and activities of proven efficacy that everyone agrees are essential, valuable, and important and appropriate to have done by trained and licensed physicians. This is likely to be a large and critical set of services of which the medical profession can be justifiably proud and for which the public should be and is deeply grateful. It would perhaps be wise for the public's elected representatives and their officials to acknowledge this more fully and frequently, even when attempting to limit health care spending or to place in perspective the contribution of medicine to society.

In the second zone medicine's current performance is not acceptable. This zone includes services and patterns of practice that are known to be ineffective or inefficacious, as well as patterns of care that provide otherwise effective services in clinically inappropriate circumstances or through unnecessarily costly delivery models. It seems essential for medicine's credibility that the profession acknowledge this zone and take or support actions to eliminate it.

A third zone, which is likely to be quite large, encompasses the services and patterns of utilization and practice that have *not* been evaluated. Despite claims and counterclaims the services and patterns cannot be placed confidently in either of the first two zones. There is an obvious need for well-designed research. However, even though more evaluative research will help, it will not likely catalogue existing practice in ways that would empty this third zone. Also it will not remove the need for clinical judgement in individual cases and social judgements about capacity and resource availability.[14] Basic issues of who will do what to whom, when, where and how often will continue to be the subjects of (albeit better informed) discussion and debate.

The most difficult and threatening area of change will be that involving substitutions among types of physicians, between physicians and other health care professionals, and between health care professionals and other workers. If our statement of objectives for physician resource policy[2] is accepted, however, adjustments to facilitate such substitutions are warranted in situations in which their superior effectiveness, appropriateness or efficiency has been demonstrated. Adjustments to the mix of health resources cannot happen overnight and will need to be carefully introduced to be fair to those in training or practising. Nevertheless, unless the subject is addressed now and strategic decisions are taken in the context of broader human health resource planning, change will not occur, and both the quality and the cost of future services will be adversely affected. One person whom we interviewed remarked that "medicine can no longer fashion itself as the total custodian of health and well-being in society." Whether it ever has is debatable. Moreover, if this were the perceived task of medicine, we suspect that physicians would be happy to be relieved of it.

Another major challenge is the constructive management of the tension between what Evans[15] has called "professional" and "political" ideologies. The professional ideology stresses that physicians should control the practice of medicine because of their professional expertise and commitment to the individual patient. (At times this professional ideology may also contain elements of a "market forces" ideology, wherein some physicians portray themselves as independent business people or entrepreneurs rather than private participants in a public system; however, we doubt that these doctors would use the rhetoric of the market if they understood fully its implications. To their credit, most leaders of organized medicine in Canada now understand the important differences between professional and market ideologies.) The political ideology stresses the collective interests of the public and points out that the expertise of the profession relates to clinical matters such as diagnosis and treatment, not to social values and preferences about how much to spend on medical services or how the costs and benefits of the public program should be distributed.

Medical expertise may give physicians control over the *content* of the practice of medicine, but it does not give them control over the *context* of practice. In short, nobody elected the physicians (or other "experts," including health economists). The political ideology also emphasizes that the context in which physicians practise is more than an insurance plan. It is a social program, one that Canadians highly value, the "management" of which continues to enjoy overwhelming popular support, regardless of the government involved. Therefore, the practice autonomy so important to the professional must coexist with public accountability.

On the whole, this tension appears to have served Canadians well, especially when compared with the performance of the US health care system.[16,17] The parties involved have exerted "checks and balances" on each other. Confrontations have frequently occurred, but compromise of some sort has typically followed.

During our interviews and literature review we noted that, despite some physicians' dissatisfaction with the public system, medicine in Canada is still perceived — certainly by others and even by many physicians — to be a privileged occupation, with substantial personal and financial rewards. Nonphysicians frequently pointed out that no other profession enjoys such privileges and discretion over the content of what it does and the context in which it is done. Education is heavily subsidized (though graduating medical students still have substantial debts[18]), employment is guaranteed, and physicians can choose where and how they practise. From this perspective, many feel that problems such as continued geographic and specialty maldistribution of physicians, the perceived unresponsiveness of academic medicine to changing social needs and the persistence of ineffective, inappropriate or more costly than necessary patterns of utilization and delivery indicate the need for Canadian physicians to be more sensitive to the collective goals of the health care system.

Nevertheless, the reconciliation of competing professional and political ideologies has been progressing steadily since the introduction of publicly financed medical insurance to most Canadians in the late 1960s. There is a continuing evolution from the view of physicians as private agents for their patients' and their own interests to the view of them as clinically skilled private agents who must also work toward achieving the collective goals of the publicly funded health care system, of which they are such a critical part. A generally workable, even if at times uneasy, partnership is slowly emerging with a new ethos in which both government and physicians respect the other's source of legitimacy. The emergence of this ethos is aided considerably by the acknowledgement that the parties ultimately share an important common goal — the maintenance and improvement of the health of Canadians. In this ethos there is substantial room for willing physicians to be brought into and rewarded for helping to solve current problems in the system.

Effectiveness as a foundation for policy

Increased emphasis should be placed on effectiveness as the primary guiding criterion in all aspects of policy formulation regarding physician resources.

Effectiveness — that is, whether a procedure or act does more good than harm or than no treatment[19] — is the sine qua non of the health care system.* It is the criterion to which accountability must be linked and on which changes in this sector must be based. It not only contributes to, indeed is a prerequisite for, efficiency but also is a primary policy objective in its own right. It is the one objective on which no one can or does disagree.†

There is ample scope for the application of this criterion throughout the policy continuum — in the revision of both undergraduate and postgraduate training, in the setting of examinations and accreditation standards, in the design of reimbursement methods and policies, in the evaluation and introduction of new technologies or alternative delivery models, in continuing education programs, and in the execution of quality assurance, including the design of maintenance of competence programs.

Both physicians and payers expressed considerable concern about the extent of current uncertainty and ignorance regarding the effectiveness of many procedures, services and clinical protocols. Comprehensive evaluation of procedures and protocols is admittedly difficult and may not always be worth doing. Furthermore, generalizations about overall effectiveness are misleading, if not dangerous. Nevertheless, the lack of measurable outcomes for many of today's interventions and practice patterns has created uneasiness about where the burden of proof should lie for further increases in resource commitments to medical services. Is it with the advocates of such increases or with those who question what proportion of service growth is *effective* service

**However, even otherwise effective procedures may fail to benefit patients if they are applied inappropriately (e.g., in clinically unwarranted cases or beyond recommended frequencies).*

†This is not to say that caring is unimportant. A humane system is as important to most Canadians as an effective and efficient one. However, it is generally unclear whether the caring function is best accomplished through the implicit definition of it as a medical act and the allocation of physician resources to it. What society wants *to have done by physicians, rather than which acts require medical training, is a separate and important question.*

growth? Our observation is that the burden has been shifting from the latter to the former and will continue to do so.

The failure to focus on information about effectiveness has a pervasive influence on policy development. Many feel that better information on effectiveness and its transfer to and implementation in patterns of practice must precede certain strategic changes in health resources, particularly physician resources. One person whom we interviewed summed up the influence by saying "doctors don't really know what they're selling, and government doesn't know what it's getting. How can they negotiate about anything, let alone what the product is worth?"

Two additional points warrant comment. First, the pressures creating ineffective utilization come from many sources, including patients and third parties such as employers who use the health care system as a "legitimizer" of absence or inability to function.[20] Nevertheless, although other policy routes may provide complementary possibilities, the formulation of clinical policy by physicians and the exercise of clinical judgement in individual patient encounters afford the best opportunities to improve effectiveness; physicians' increased attention to "utilization management"[21] is an encouraging sign.

Second, optimal use is not being made of the available effectiveness data.[22-24] Perhaps the most important challenge to clinical educators and policymakers is to find effective ways to transfer and widely implement the results of effectiveness studies. We strongly encourage the continued and accelerated development of clinical practice guidelines.[25,26] This should be a high priority in a national physician resource strategy because of the general applicability of guidelines and the high fixed costs of developing them. Furthermore, this activity falls clearly within the domain of the medical profession because it relates to the content rather than the context of practice. There is ample scope for physicians to lead this development through national and regional organizations including provincial medical associations and licensing authorities, the College of Family Physicians of Canada and the Royal College of Physicians and Surgeons of Canada. Academic medical centres, in particular, should play a larger role in this activity, including (a) the generation and synthesis of research contributing to the development of guidelines, (b) the identification of situations in which guidelines are needed and (c) the training of people who can assist with the challenging tasks of generating guidelines, communicating them to their colleagues, monitoring the adoption of guidelines and devising strategies to increase their influence on clinical practice. The last of these roles is especially important, because the existence of guidelines does not in itself guarantee desired changes in clinical behaviour.

More extensive development of clinical guidelines should have other benefits. Guidelines may reduce uncertainty in some areas of practice that may affect the attractiveness of certain specialties to students. They may also reduce physicians' risk of adverse outcomes in malpractice actions. Moreover, guidelines indicating that a particular proportion of current utilization is unwarranted should result in policies for competence assurance as well as policies affecting the supply of undergraduate and postgraduate training positions and the entry into practice of graduates of foreign medical schools.

Current patterns of utilization

During our interviews we found little, if any, disagreement with the view that there is significant room for improvement in the effectiveness and appropriateness of current patterns of utilization of medical services. What "significant" means is debatable; however, researchers and reviewers of the health services research literature routinely find that 15% to 30% of a wide range of services are provided inappropriately.[22,27,28]

No carefully constructed global estimate of the extent of ineffective or inappropriate utilization exists for Canada, although such an estimate could be derived from a systematic review of utilization patterns against standards developed from available outcomes research, clinical trials of effectiveness, consensus statements and clinical practice guidelines. Although this would be a major project, it may be warranted both clinically (to assess the "state of the art" at a given time and to reinforce quality assurance and maintenance of competence activities) and politically (to move the debate beyond what the problems are and how serious they are to more important collaborative discussions of corrective policies).

The provision of ineffective or inappropriate care has a number of serious implications, the most obvious being that it often involves threats to the health of patients — "inappropriate care is poor quality care."[29] But inappropriate patterns of medical service utilization also have other costs:

- The creation of fiscal pressures for ministries of health in a fee-for-service reimbursement environment that cannot and has not the resources to monitor and evaluate the appropriateness of every medical intervention.
- The creation of political pressures for medical associations and income pressures for most medical practitioners by consuming considerable shares of constrained medical care budgets, leaving less for the provision of appropriate service.

- Lost opportunities, beyond medical care, to enhance the health status of the population.

The underlying causes of the distortions in utilization patterns are numerous and complex.[30] Here we wish to make only two observations. First, attempts to explain variation in the extent of inappropriate care appear to lead back to "the practice style of the individual physician,"[27,31] thereby reinforcing the theme of earlier articles in this series that it is the millions of everyday microdecisions by individual physicians that matter and that policies to improve the effectiveness and appropriateness of care must address the incentives and rewards in individual practice.

Second, the practice style of individual physicians is affected by the *interaction* of contextual policies; for example, those on remuneration and physician supply. In particular, it is widely conceded that in large urban centres fee-for-service payment coupled with oversupply of physicians leads to more intensive and sometimes questionable servicing of patients: a relatively fixed patient pool has to be shared among a growing number of physicians seeking to maintain reasonable incomes. The training of most recent graduates has made them most comfortable with a procedural, technologically oriented practice style that relies on heavy use of secondary and tertiary resources, which compounds the problem. Therefore, irrespective of increased efforts to improve clinical knowledge or change clinical behaviour (e.g., through effectiveness research, continuing education, utilization monitoring, clinical guidelines, or practice audit and feedback), improvements in the effectiveness and appropriateness of current utilization patterns will require simultaneous action in several other policy areas.[14,23,32]

Ineffective or inappropriate care is one source of inefficiency. Such care is "technically" inefficient, or more accurately "cost-ineffective,"[33,34] because resources are used up without corresponding improvements in patient health. There is, however, another type of efficiency problem, considerably more thorny and difficult to resolve, which US policy analyst Pete Welch has succinctly labelled the "epsilon" problem: the utilization of services that may be appropriate from a narrow effectiveness perspective in individual cases but which generate very small benefits for patients while using up resources that have a social "opportunity cost" in that they are not therefore available for other, perhaps more valuable uses, in other settings, with other patients.[35-37]

Physicians may not always be aware of the relative costs and benefits of their decisions, but often they are, and the fundamental problem is one of role conflict. Increasingly, physicians are called upon to balance their role as the agent for the individual patient with that as a resource manager for all patients. The latter role frequently comes without any incentive, reward or recognition and often without any supportive policies or structures for reducing the accompanying professional and personal anxiety. Managing such role conflict is daunting and stressful.

We recognize that this is a highly contentious and often emotionally charged area; however, improvements in the allocation of resources in the health care system would seem most likely to occur by means of changes in the content of practice made by physicians through increased attention and commitment to balancing their dual roles. In the context of limited and publicly determined and financed resource commitments for medical care, even private participants like physicians must adopt a broader notion of efficiency. We believe that, although supportive policies affecting the context of practice are required, adjustments to patterns of utilization are ultimately best left to individual physicians and the medical profession as a whole, in whose hands expertise about the content of practice resides. It is encouraging that physicians also recognize this.[38,39]

Self-regulation

Attempts to improve the effectiveness and efficiency of medical care intersect with the self-regulatory nature of medicine in two important areas: the exclusivity of fields of medical practice and the lifetime maintenance of competence of physicians.

The practice of medical acts is restricted to those holding licences issued by provincial licensing authorities. The problem here is one of capabilities from training coming up hard against restrictions in application. Any informed examination of the educational and practical preparation of health professionals will reveal substantial overlapping in "fields of training." Thus, for example, clinical psychologists are trained in many areas that overlap with psychiatric training, extended duty nurses pick up many skills covered in medical curricula, nurse midwives have repeatedly been shown to be able to perform acts that continue to be widely regarded as medical acts, and a variety of technician and technologist programs overlap with medical curricula.

These overlapping areas of training in themselves do not pose any particular problem. The difficulty is that, despite the partial congruence of training, virtually everything covered in medical curricula becomes "medical practice" and, therefore, the exclusive domain of licensed medical practitioners. There have been few serious, systematic attempts outside of Ontario, and no successful ones,[40] to reconcile and restrict such exclusive fields of practice to those domains without overlap.

The monopolization of clinical activity by a

dominant profession has important implications for other policy areas. First, physician supply is affected, because estimates of the "need" for physicians will, by definition and assumption, be overestimated relative to the requirements implied by having physicians provide only the services that only they are trained to provide. Second, expenditures on medical care are likely higher than necessary, because less intensively trained personnel are unable to perform some tasks. Third, the geographic maldistribution of physicians might be less of a problem if, for example, nurse practitioners were more widely available. But scientific evidence on and practical experience in the (cost) effectiveness of nurse practitioners have not been translated into regulatory reform.[41,42] It is ironic that the scope of practice for physician extenders and substitutes is in reality very elastic — expanding when physicians are not available, contracting when they are. Yet it is likely that this "double standard" will continue in the face of a slack (rather than taut) and growing physician supply.[43]

We therefore support the elimination of exclusive fields of practice and their replacement by a more circumscribed set of exclusive acts and reserved titles to address overlapping scopes of capability of physicians and other health care personnel.

A second area needing reform is the component of quality assurance activities represented by the maintenance of clinical competence throughout a physician's practice life. Implicit in the present licensing process is the belief that a physician, once licensed, will continue to upgrade his or her level of clinical knowledge and technical competence throughout the 30 to 40 years of practice beyond the highest level of certification. Professional continuing education is assumed (implicitly even if not always explicitly) to be an effective means of ensuring this continuing competence, yet many of those we interviewed expressed serious doubts about the adequacy of this approach.

The desire for some systematic assurance of continuing competence is more than a desire to ensure that clinicians, once licensed, continue to "do no harm" throughout their practice lives. It seems reasonable for individual patients and the broader public interest to expect physicians to prescribe diagnostic and therapeutic regimens that reflect evolving states of knowledge. The body of clinical knowledge grows and changes rapidly. New effective technologies become available while others are shown to be inappropriate or cost-ineffective. These changes in knowledge ought to be at the fingertips of clinical decision-makers. It is the collectivity of those decisions that substantially determines our consumption of all health care services, our investments in particular types of human and physical capital and, therefore, our forgoing as a community other goods and services that we may value.

There is, predictably, considerable disagreement about whether continuing competence assurance (CCA) should be voluntary or compulsory and where responsibility for the activity should lie. Maudsley[44] recently noted that "licensing authorities have the unique, legislated responsibility for ensuring the continuing competence of the practising profession." The CMA is opposed to any initiatives that are not voluntary, although the policy is under review by the CMA's Council on Medical Education. It is not clear how one could ensure continuing competence without some form of mandatory CCA when many in the profession might decline to be involved in a voluntary process.

We do not wish to imply that the logistics of mandatory CCA are without problems. The development of guidelines alone is a tremendously complex undertaking.[28,45] Attempts to compare patterns of practice against such guidelines, and to develop effective mechanisms for altering those patterns, will require ingenuity, commitment and cooperation. The task may not be impossible, but it should not be underestimated. Considerably more resources and effort should be invested immediately in CCA activity. Furthermore, we would support (at least initially) a voluntary program, provided it were outcome-based rather than process-based and had clearly articulated procedures that assured all relevant parties of the continuing competence of *all* physicians licensed to practise medicine. If effective voluntary programs cannot be designed, then mandatory ones should be established.

Current problems in the development of CCA range from a lack of validated processes for assessing competence in all areas of medicine, through issues of procedural and legal jurisdiction, to diverse issues relating to avenues of recourse in the event of demonstrated inability to meet CCA standards. We do not claim to have intimate knowledge of the complex variety of issues that would require attention in each jurisdiction in Canada, but we do believe that this is an area worthy of considerably more examination and effort, and we agree with Maudsley[44] that it is an area in which licensing authorities should assume much greater responsibility. This is not to imply that fault lies exclusively with either the licensing authorities or the profession. A recent Canadian study[46] revealed a more eclectic group of causes, which varied across provinces and included legal decisions, lack of regulatory authority, lack of skills or resources within provincial regulatory authorities, lack of will or interest among those authorities and lack of support from members of the professions surveyed.

In an earlier article[5] we argued that the academic medical establishment needed to align its activities more closely with the public interest. There is a similar need for the bodies that have been granted responsibility for protecting the health of the public through self-regulatory avenues to effect a corresponding realignment. Provincial governments have delegated authority over professional regulation and licensure to provincial medical colleges, comprising largely members of the medical profession. These authorities have been entrusted by the public to set and enforce clinical standards in the public interest. Yet no explicit lines of accountability to the public or reviews of the performance of these licensing authorities in fulfilling their mandate have ever been established. Much has been written; little has been done. (This is not to imply that *nothing* has been done. For example, the College of Family Physicians of Canada has introduced a practice assessment program, and the College of Physicians and Surgeons of Ontario has for the past 10 years operated a peer assessment program[47] and has recently opened its council meetings to the public. Efforts to improve the evaluation of physicians in practice are also beginning in other provinces.[48] These are important steps, but still only initial steps toward a national system of quality assurance and maintenance of competence that is population-based, harmonizes self-regulation with public regulation and serves the public by enhancing competence as well as protecting against incompetence.[32,49])

Thus, for example, there are no mechanisms through which the public is able to evaluate the assumption of continuing competence or the effectiveness of existing discretionary continuing education activities. There are no existing practical means (without changes in legislation, which are beginning to emerge in some provinces, such as Ontario, through its Health Professions Legislative Review) for the public to ensure that more efficient deployment of health care personnel becomes embodied in public health care policy. The public, through its elected representatives, has assigned most of these responsibilities to the profession on the understanding that the public's interests will be paramount in the activities of self-regulation. But if the medical profession fails to execute this trust, it risks intrusion by others into an area in which public representatives may have no particular desire (or skills) but do have an obligation to tread.[32]

This article has identified several important areas in which opportunities and challenges exist for physicians, individually and collectively, to show leadership in improving the health care system. Our closing observation comes from Arnold Relman,[50] former editor of the *New England Journal of Medicine*. Physicians have the power to make health-care reform possible. They know the system better than anyone, and if they want to, they can use its resources more prudently than they do now without any loss of medical effectiveness.

Looking forward

In the next and final article we outline what we see as necessary "next steps." Although the full report may serve as a framework for policy change it was not intended as a detailed blueprint for such change. Nor can it effect change: these actions must come from others. Because it has been 18 months since the report was completed and released, the final article also affords an opportunity to reflect briefly on some of the key policy events during that time and their relation to our view of the necessary next steps.

We thank Jonathan Lomas for his review of the sections of the report upon which this article is based and for his comments on an earlier version of this article. We alone are responsible for the views expressed here and for remaining errors or omissions.

References

1. Barer ML, Stoddart GL: Toward integrated medical resource policies for Canada: 1. Background, process and perceived problems. *Can Med Assoc J* 1992; 146: 347-351
2. Stoddart GL, Barer ML: Toward integrated medical resource policies for Canada: 2. Promoting change — general themes. Ibid: 697-700
3. Idem: Toward integrated medical resource policies for Canada: 3. Analytic framework for policy development. Ibid: 1169-1174
4. Barer ML, Stoddart GL: Toward integrated medical resource policies for Canada: 4. Graduates of foreign medical schools. Ibid: 1549-1554
5. Stoddart GL, Barer ML: Toward integrated medical resource policies for Canada: 5. The roles and funding of academic medical centres. Ibid: 1919-1924
6. Idem: Toward integrated medical resource policies for Canada: 6. Remuneration of physicians and global expenditure policy. *Can Med Assoc J* 1992; 147: 33-38
7. Barer ML, Stoddart GL: Toward integrated medical resource policies for Canada: 7. Undergraduate medical training. Ibid: 305-312
8. Idem: Toward integrated medical resource policies for Canada: 8. Geographic distribution of physicians. Ibid: 617-623
9. Idem: Toward integrated medical resource policies for Canada: 9. Postgraduate training and specialty certification. Ibid: 999-1005
10. Stoddart GL, Barer ML: Toward integrated medical resource policies for Canada: 10. Information creation and dissemination. Ibid: 1325-1329
11. Barer ML, Stoddart GL: *Toward Integrated Medical Resource Policies for Canada.* Prepared for the Federal/Provincial/Territorial Conference of Deputy Ministers of Health, 1991
12. Idem: *Toward Integrated Medical Resource Policies for Canada: Background Document*, U of British Columbia (HPRU discussion paper 91:6D), Vancouver, and McMaster U (CHEPA working paper 91-7), Hamilton, Ont, 1991
13. Idem: *Toward Integrated Medical Resource Policies for Can-*

ada: Appendices, U of British Columbia (HPRU discussion paper 91:7D), Vancouver, and McMaster U (CHEPA working paper 91-8), Hamilton, Ont, 1991
14. Wennberg JE: Outcomes research, cost containment, and the fear of health care rationing. *N Engl J Med* 1990; 323: 1202-1204
15. Evans RG: *Strained Mercy: the Economics of Canadian Health Care*, Butterworths, Toronto, 1984: ch 14
16. Evans RG, Lomas J, Barer ML: Controlling health expenditures — the Canadian reality. *N Engl J Med* 1989; 320: 571-577
17. Evans RG, Barer ML, Hertzman C: The 20-year experiment: accounting for, explaining, and evaluating health care cost containment in Canada and the United States. *Annu Rev Public Health* 1991; 12: 481-518
18. Professional Association of Residents and Internes of British Columbia: *Young Physicians' Perspective on the Future of the Health Care System in British Columbia: Concerns and Aspirations*. Submission to the BC Royal Commission on Health Care and Costs, Oct 1990
19. Sackett D: Evaluation of health services. In Last JM (ed): *Public Health and Preventive Medicare*, 11th ed, ACC, New York, 1980: 1800-1823
20. Woodward CA, Gilbert JR, Roberts RS et al: When is a patient's use of primary care services unwarranted? Some answers from physicians. *Can Med Assoc J* 1983; 129: 822-827
21. Linton AL, Peachey DK: Utilization management: a medical responsibility. *Can Med Assoc J* 1989; 141: 283-286
22. Lomas J: Quality assurance and effectiveness in health care: an overview. *Qual Assur Health Care* 1990; 2: 5-12
23. Dixon AS: The evolution of clinical policies. *Med Care* 1990; 28: 201-220
24. Leape LL: Unnecessary surgery. *Health Serv Res* 1989; 24: 352-407
25. Linton AL, Peachey DK: Guidelines for medical practice: 1. The reasons why. *Can Med Assoc J* 1990; 143: 485-490
26. Peachey DK, Linton AL: Guidelines for medical practice: 2. A possible strategy. Ibid: 629-632
27. Brook RH, Vaiana ME: *Appropriateness of Care: a Chart Book*, National Health Policy Forum, Washington, 1989
28. Roos NP, Roos LL: Small area variations, practice style and quality of care. In Wenzel RP (ed): *Assessing Quality Health Care: Perspectives for Clinicians*, Williams & Wilkins, Baltimore, 1992: 223-238
29. Centre for Health Economics and Policy Analysis: *Report of the International Conference on Quality Assurance and Effectiveness in Health Care*, CHEPA, McMaster U, Hamilton, Ont, 1990: 15
30. Barer ML, Stoddart GL: *Toward Integrated Medical Resource Policies for Canada: Background Document*, U of British Columbia (HPRU discussion paper 91:6D), Vancouver, and McMaster U (CHEPA working paper 91-7), Hamilton, Ont, 1991: 47-51 (ch 4C)
31. Brook RH, Park RE, Chassin MR et al: Predicting the appropriate use of carotid endarterectomy, upper gastrointestinal endoscopy, and coronary angiography. *N Engl J Med* 1990; 323: 1173-1177
32. Lomas J: *Regulating Limits to Medicine: Towards Harmony in Public and Self-regulation* (policy commentary C91-2), Centre for Health Economics and Policy Analysis, McMaster U, Hamilton, Ont, 1991
33. Culyer AJ: The normative economics of health care finance and provision. *Oxf Rev Econ Policy* 1989; 5: 34-58
34. Seldon JR, Stoddart GL: Efficiency and health care resource use: concepts and applications. *South Bus Econ J* 1989; 13: 2-13
35. Berwick DM: Health services research and quality of care: assignments for the 1990s. *Med Care* 1989; 27: 763-771
36. Watanabe M: Utilization studies: the Alberta experience. *ACMC Forum* 1990; 23 (2): 1-11
37. Woodward CA, Stoddart GL: Is the Canadian health care system suffering from abuse? A commentary. *Can Fam Phys* 1990; 36: 283-289
38. Naylor D, Linton AL: Allocation of health care resources: a challenge for the medical profession. *Can Med Assoc J* 1986; 134: 333-340
39. Scully HE: Situational analysis. In *Proceedings of the Royal College of Physicians and Surgeons of Canada 11th Biennial Conference of Specialties*, RCPSC, Ottawa, 1991: 3-8
40. Contandriopoulos A-P, Laurier C, Trottier L-H: Toward an improved work organization in the health services sector: from administrative rationalization to professional rationality. In Evans RG, Stoddart GL: *Medicare at Maturity: Achievements, Lessons and Challenges*, Banff Centre School of Management, U of Calgary Pr, Calgary, 1986: 287-328
41. Spitzer W: The nurse practitioner revisited: slow death of a good idea. *N Engl J Med* 1984; 310: 1049-1051
42. Denton FT, Gafni A, Spencer BG et al: Potential savings from the adoption of nurse practitioner technology in the Canadian health care system. *Socioecon Plann Sci* 1983; 17: 199-209
43. Lomas J, Barer ML, Stoddart GL: *Physician Manpower Planning: Lessons from the Macdonald Report*, Ont Economic Council, Toronto, 1985
44. Maudsley RF: Medical licensure: Let's not lose sight of the objective. *Can Med Assoc J* 1990; 143: 98-100
45. Lomas J: Words without action? The production, dissemination and impact of consensus recommendations. *Annu Rev Public Health* 1991; 12: 41-65
46. Fooks C, Rachlis M, Kushner C: Concepts of quality of care: national survey of five self-regulating health professions in Canada. *Qual Assur Health Care* 1990; 2: 89-109
47. McAuley RG, Paul WM, Morrison GH et al: Five-year results of the peer assessment program of the College of Physicians and Surgeons of Ontario. *Can Med Assoc J* 1990; 143: 1193-1199
48. Parboosingh J: Evaluating the practising physician. *ACMC Forum* 1991; 24 (4): 12-13
49. Maudsley RF: To serve and protect: licensure, certification, and maintenance of competence. *Ann R Coll Phys Surg Can* 1991; 24: 105-106
50. Relman AS: What market values are doing to medicine. *Atlantic Monthly* 1992; Mar: 99-106